

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. 11. (canceled).

12. (original): A medical image processing apparatus for evaluating image quality of a radiation image obtained by using a radiation imaging system which performs radiation imaging to record radiation image information on a recording medium, reads out the radiation image information from the recording medium to generate image data, and performs a predetermined image processing for the image data to display or output a radiation image, thereby inspecting said radiation imaging system, said medical image processing apparatus comprising:

image processing means for performing image processing on input image data;

measuring means for performing, when image data representing a radiation image obtained by imaging a phantom having a plurality of image quality evaluating patterns as to a predetermined image quality evaluation item is inputted, measurement with respect to the input image data as to said predetermined image quality evaluation item;

inputting means to be used for inputting inspection result as to said predetermined image quality evaluation item obtained by visually observing the displayed or outputted radiation image; and

determination means for determining the image quality of said radiation image on the basis of measurement result obtained by said measuring means and the inspection result inputted by using said inputting means.

13. (original): A medical image processing apparatus according to claim 12, further comprising:

position detecting means for detecting a position of said phantom in said radiation image on the basis of the input image data.

14. (original): A medical image processing apparatus according to claim 13, wherein said position detecting means detects the position of said phantom in said radiation image by detecting images of a plurality of markers respectively disposed at positions different from each other in said phantom.

15. (original): A medical image processing apparatus according to claim 14, wherein said plurality of markers include at least three markers.

16. (previously presented): A medical image processing apparatus according to claim 12, further comprising:

control means for controlling, when image data representing a radiation image obtained by radiation imaging of a phantom having an image quality evaluating pattern to be used for visual evaluation and an image quality evaluating pattern to be used for quantitative evaluation as to a predetermined image quality evaluation item is inputted, to display determination result based on the quantitative evaluation as to said predetermined image quality evaluation item together with said radiation image.

17. (previously presented): A medical image processing apparatus according to claim 12, further comprising:

control means for controlling to display together with said radiation image at least one of imaging condition when said radiation image has been imaged, image reading condition when said radiation image information has been read out from said recording medium, image processing condition when the input image data has been subjected to the image processing by said image processing means and display condition when said radiation image is displayed.

18. (previously presented): A medical image processing apparatus according to claim 12, further comprising:

recoding means for recording the measurement result obtained by said measuring means and the inspection result inputted by using said inputting means.

19. (previously presented): A medical image processing apparatus according to claim 12, further comprising:

control means for controlling, when said determination means has determined that abnormality of the image quality exists in said radiation image, to notify a maintenance center of existence of the abnormality of the image quality.

20. (previously presented): A medical image processing apparatus for evaluating image quality of a radiation image obtained by using a radiation imaging system, thereby performing inspection of said radiation imaging system, said medical image processing apparatus comprising:

position detecting means for detecting, when image data representing a radiation image obtained by imaging a phantom having an image quality evaluating pattern as to at least one image quality evaluation item and a plurality of markers respectively disposed at a plurality of positions different from each other by using said radiation imaging system is inputted, a position of said phantom in said radiation image by using said plurality of markers;

comparison and calculating means for comparing the position of said phantom detected by said position detecting means with a reference position of said phantom in said radiation image to calculate an amount of difference in a linear direction and a rotational direction;

search area changing means for changing a search area, which is a region within said radiation image to be measured as to a predetermined image quality evaluation item, on the basis of the amount of difference in the linear direction and the rotational direction calculated by said comparison and calculating means;

physical amount calculating means for performing measurement as to said predetermined image quality evaluation item within the search area changed by said search area changing means, and calculating a physical amount representing characteristic of said radiation image;

determination criterion changing means for changing a determination criterion to be used for determining the image quality of said radiation image, on the basis of the amount of difference in the linear direction and the rotational direction calculated by said comparison and calculating means; and

determination means for determining the image quality of said radiation image by using said physical amount calculated by said physical amount calculating means, on the basis of the determination criterion changed by said determination criterion changing means.

21. (currently amended): A medical image processing apparatus according to claim 20, further comprising ~~control means for controlling~~ ;

~~control means for controlling~~, when said determination means has determined that abnormality of the image quality exists in said radiation image, to notify a maintenance center of existence of the abnormality.

22. (previously presented): A medical image processing apparatus for evaluating image quality of a radiation image obtained by using a radiation imaging system, thereby performing inspection of said radiation imaging system, said medical image processing apparatus comprising:

position detecting means for detecting, when image data representing a radiation image obtained by imaging a phantom having an image quality evaluating pattern as to at least one image quality evaluation item and a plurality of markers respectively disposed at a plurality of positions different from each other by using said radiation imaging system is inputted, a position of said phantom in said radiation image by using said plurality of markers;

comparison and calculating means for comparing the position of said phantom detected by said position detecting means with a reference position of said phantom in said radiation image to calculate an amount of difference in a linear direction and a rotational direction;

image correcting means for correcting the position of said phantom in said radiation image so that the amount of difference in the linear direction and the rotational direction calculated by said comparison and calculating means is reduced;

physical amount calculating means for performing measurement with respect to an image of said phantom, of which position is corrected by said image correcting means, as to a predetermined image quality evaluation item, and calculating a physical amount representing characteristic of said radiation image; and

determination means for determining the image quality of said radiation image on the basis of the physical amount calculated by said physical amount calculating means.

23. (previously presented): A medical image processing apparatus according to claim 22, further comprising:

control means for controlling, when said determination means has determined that abnormality of the image quality exists in said radiation image, to notify a maintenance center of existence of the abnormality of the image.

24. - 30. (cancelled):

31. (previously presented): A method of evaluating image quality of a radiation image obtained by using a radiation imaging system, thereby inspecting said radiation imaging system, said method comprising the steps of:

- (a) inputting an image data representing a radiation image obtained by radiation imaging of a phantom having an image quality evaluating pattern as to at least one image quality evaluation item and a plurality of markers respectively disposed at a plurality of positions different from each other;
- (b) detecting a position of said phantom in said radiation image by using said plurality of markers on the basis of the image data inputted at step (a);
- (c) comparing the position of said phantom detected at step (b) with a reference position of said phantom in said radiation image to calculate an amount of difference in a linear direction and a rotational direction;
- (d) changing a search area, which is a region within said radiation image to be measured as to a predetermined image quality evaluation item, on the basis of the amount of difference in the linear direction and the rotational direction calculated at step (c);
- (e) performing measurement in the search area changed at step (d) as to said image quality evaluation items, and calculating a physical amount representing characteristic of said radiation image;
- (f) changing a determination criterion to be used for evaluating the image quality of said radiation image on the basis of the amount of difference in the linear direction and the rotational direction calculated at step (c); and
- (g) evaluating the image quality of said radiation image by using the physical amount calculated at step (e) on the basis of the determination criterion changed at step (f).

32. (currently amended): A method according to claim 31, further comprising the step of:

notifying, when it is determined at step (g) that abnormality of the image quality exists in said radiation image, a maintenance center of existence of the abnormality of the image quality.

33. (previously presented): A method of evaluating image quality of a radiation image obtained by using a radiation imaging system, thereby inspecting said radiation imaging system, said method comprising the steps of:

(a) inputting an image data representing a radiation image obtained by radiation imaging of a phantom having an image quality evaluating pattern as to at least one image quality evaluation item and a plurality of markers respectively disposed at a plurality of positions different from each other;

(b) detecting a position of said phantom in said radiation image by using said plurality of markers on the basis of the image data inputted at step (a);

(c) comparing the position of said phantom detected at step (b) with a reference position of said phantom in said radiation image to calculate an amount of difference in a linear direction and a rotational direction;

(d) correcting the position of said phantom in said radiation image so that the amount of difference in the linear direction and the rotational direction calculated at step (c) is reduced;

(e) performing measurement with respect to the image of said phantom, of which position has been corrected at step (d), as to a predetermined image quality evaluation item, and calculating a physical amount representing characteristic of said radiation image; and

(f) determining the image quality of said radiation image on the basis of the physical amount calculated at step (e).

34. (previously presented): A method according to claim 33, further comprising the step of:

notifying, when it is determined at step (f) that abnormality of the image quality exists in said radiation image, a maintenance center of existence of the abnormality of the image quality.